

REMARKS

Status of the Claims

By this Amendment, claims 1, 3-16, and 18-33 are pending. Claims 1, 6, 12, 16, 21, 24, 27, 32, and 33 have been amended and claims 2 and 17 have been cancelled. Support for the claim amendments can be found in the originally filed specification and claims. No new matter has been added. The specification has also been amended as discussed below.

Objection to the Specification

The Office has objected to the disclosure for the reasons set forth at page 2 of the Office Action. By this Amendment, Applicant has amended the specification as requested by the Office. Accordingly, Applicant asserts that the objection has been overcome.

Objections To The Claims

The Office has objected to claims 7, 13, and 28 as being in improper dependant form. According to the Office, these claims do not further limit claims 6, 12, and 27, from which they depend, for the reasons provided at page 2 of the Office Action. Applicants respectfully disagree.

Claims 6, 12, and 27 are directed to "nitrogen containing" viscosity index improvers that are the reaction product of a monomer and an olefin copolymer. Claims 7, 13 and 28, on the other hand, are directed to "non-dispersant" viscosity index improvers, which are disclosed as being added to the compositions of the present application, "in the alternative or in combination with the foregoing nitrogen containing viscosity index improvers." See the page 13, lines 3-4 of the present application.

Because claims 7, 13, and 28 recite non-dipsersant viscosity index improvers, which are not recited in claims 6, 12, and 27, Applicant asserts that the claims are further limiting.

Withdrawal of the objections is therefore requested.

Rejections Under 35 U.S.C. § 112 and § 101

The Office has rejected claims 6, 12, 21 and 27 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement for the reasons provided at pages 3 to 4 of the outstanding Office Action. In particular, the Office points out that claims 6, 12, 21 and 27 recite various nitrogen-containing molecules as viscosity-index improvers, while the specification only discloses the use of these compounds when they are grafted onto an olefin copolymer.

For similar reasons, the Office has rejected claims 6, 12, 21 and 27 under 35 U.S.C. 101, alleging that the invention is inoperative and therefore lacks utility, as discussed at pages 4 to 5 of the outstanding Office Action. Applicant respectfully traverses.

Claims 6, 12, 21 and 27 have been amended as set forth above in the "Amendments to the Claims Section," to recite, among other things, a "nitrogen containing viscosity index improver that is a reaction product of a monomer and an olefin copolymer." Written description support for this amendment can be found, for example, at page 12, lines 15-26. Applicant asserts that this amendment overcomes the rejections under 35 U.S.C. 112 and 101, and therefore requests that these rejections be withdrawn.

Rejections over the Carlisle Reference

Carlisle Alone

The Office has rejected claims 1, 4-5, 9-10, 16, 19-20 and 23 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,397,489 ("Carlisle"), for the reasons provided at pages 5 to 6 of the outstanding Office Action. Applicant respectfully traverses the rejection.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. MPEP § 2131. "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Applicant's claims, as amended, recite a composition comprising, among other things, an acrylamide compound of the formula:



where R¹ is selected from an α,β-unsaturated linear or branched alkylene group, and R² and R³ are independently selected from H, a linear or branched alkyl or alkenyl group, an aryl group, a cycloalkyl group, an aralkyl group, an alkyaryl group, an alkyl amine group, and an aryl amine group, provided that at least one of R² and R³ contain a titratable nitrogen.

Carlisle fails to teach Applicant's claimed acrylamide monomer compound. Instead, Carlisle teaches polyacrylates and polyacrylamides of formula III. See Carlisle,

Column 3, lines 33 to 50. The formula III polyacrylates are defined by the Carlisle reference as compounds comprising at least two unsaturated acrylic groups. See column 3, lines 29-30.

Applicant's claimed acrylamide differs from that of Carlisle at least because it does not contain at least two unsaturated acrylic groups. Because every element of the claims is not taught, no *prima facie* case of anticipation exists and the rejection should be withdrawn.

Carlisle in view of Mishra

The Examiner rejected claims 2, 17, and 30-33 under 35 U.S.C. 103 as being unpatentable over Carlisle in view of U.S. Patent no. 6,350,723 ("Mishra"), for the reasons set forth at pages 6 to 8 of the outstanding Office Action. The claims 1 and 16, as presently amended, incorporate the limitations of cancelled claims 2 and 17.

In the rejection, the Office admits that Carlisle alone fails to teach Applicant's claimed acrylamide compound of the formula:



where R¹ is selected from an α,β-unsaturated linear or branched alkylene group, and R² and R³ are independently selected from H, a linear or branched alkyl or alkenyl group, an aryl group, a cycloalkyl group, an aralkyl group, an alkyaryl group, an alkyl amine group, and an aryl amine group, provided that at least one of R² and R³ contain a titratable nitrogen. However, the Office alleges that it would have been obvious to combine Mishra with Carlisle to supply the missing teaching. Specifically, the Office

alleges that Mishra teaches a series of dispersant dialkylaminoalkylacrylamide monomers, such as N, N-dimethylaminopropylacrylamide, which have the structure recited in claims 2, 17, and 30. Applicant respectfully traverses this rejection.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See M.P.E.P. § 2143.

Carlisle teaches dispersant additives obtainable by reacting a polyacrylate with a dispersant having at least one reactive nitrogen containing moiety. Column 1, lines 59-64. As discussed above, the polyacrylates are defined by the Carlisle reference as compounds comprising at least two unsaturated acrylic groups. See column 3, lines 29-50 and formula III. As admitted by the Patent Office, Carlisle fails to teach Applicant's claimed acrylamide compound.

The Mishra reference does not remedy the deficiencies of Carlisle. Instead, Mishra teaches block copolymers having at least one block of polymerized long-chain alkyl methacrylate monomer(s) and a block derived from conjugated alkadiene monomer(s). Mishra, Column 2, lines 16-19. The preferred conjugated alkadienes for use in the block copolymers are butadiene and isoprene. Column 2, lines 28-29. The alkyl methacrylate blocks(s) are obtained by polymerization of alkyl methacrylate monomers. Column 2, lines 33-37.

The dialkylaminoalkylacrylamide monomers of Mishra, such as N, N-dimethylaminopropylacrylamide, which are alleged by the Office to have the structure recited in claims 2, 17, and 30, are merely taught as part of a long laundry list of other potential "additional monomers." These additional monomers can optionally be used to form the block copolymers of Mishra. Column 2, line 50 to column 3, line 12.

Neither Carlisle nor Mishra provide the requisite motivation to replace the polyacrylates of Carlisle with the dialkylaminoalkylacrylamide monomers of Mishra, as is asserted by the Office. The block copolymers of Mishra have little or no similarity to the compounds of Carlisle, other than that they both can be used in lubricants. Carlisle is directed to dispersant additives obtainable by reacting a polyacrylate with a dispersant having at least one reactive nitrogen containing moiety, while Mishra, on the other hand, is directed to alkyl methacrylate/alkadiene block copolymers. The teachings of Mishra to optionally use a dialkylaminoalkylacrylamide monomer in a block copolymer that is completely unrelated to the dispersant additives of Carlisle simply cannot provide the necessary motivation to modify Carlisle in the manner suggested by the Office.

In an attempt to supply the necessary motivation, the Office has asserted that one of ordinary skill in the art would have been motivated to modify the dispersant additives of Carlisle by replacing the polyacrylate reactants with an acrylamide of the type taught by Mishra in order to further improve the dispersant properties of the product. See Office Action, page 8. However, there is nothing in Carlisle or Mishra to suggest that using the monomers of Mishra would result in an improvement of the Carlisle compounds.

In fact, as discussed above, Carlisle specifically teaches that the polyacrylates employed to form the Carlisle compounds are to include at least two unsaturated acrylic groups. See column 3, lines 29-50 and formula III. Applicant asserts that this teaching of Carlisle would suggest to one of ordinary skill in the art that the dialkylaminoacrylamide monomers of Mishra, which contain only a single acrylamide group, should not be used in place of the polyacrylates/polyacrylamides of Carlisle. Thus, the teachings of the references as a whole actually teach away from the proposed combination.

For at least the above reasons, one of ordinary skill in the art would not have been motivated to combine the teachings of Mishra and Carlisle, as proposed by the Office. Without the requisite motivation, no *prima facie* case of obviousness exists. Accordingly, Applicant asserts that the rejection should be withdrawn.

Further, with respect to claim 30, the Office has alleged that Carlisle does disclose a reaction product with the B-D(-E)-B formula recited in Claim 30. See Office Action, Page 7. Applicant respectfully traverses this position.

Claims 30 recites, among other things, a dispersant comprising a compound of the formula B-D(-E)-B, where E is a group derived from a compound of the formula:



For the reasons discussed above, a compound of the claimed E group formula is not taught by Carlisle. Instead, Carlisle teaches a reaction product in which a Y¹ substituent is derived from the polyacrylamides of formula III, comprising at least two unsaturated

acrylic or acrylimide groups. See column 3, lines 29-50 and column 5, line 51 to column 6, line 27.

Because the E group is not taught by the Carlisle reference, the claimed compound of formula B-D(-E)-B is also not taught. For at least this reason, no *prima facie* case of obviousness exists, and the rejection should be withdrawn.

Carlisle in view of Watts

The Office has rejected claims 3 and 18 as being unpatentable over Carlisle in view of U.S. Patent No. 5,811,377 ("Watts"), for the reasons set forth at page 8 of the Office Action. Applicant respectfully traverses the rejection.

Claims 3 and 18 depend from claims 1 and 16, respectively, and therefore incorporate all of the limitations of claims 1 and 16. As discussed above, Carlisle fails to teach all the limitations of claims 1 and 16, including applicant's claimed acrylamide compound.

Watts does not remedy the defects of Carlisle, but instead is directed to an oil-soluble reaction product of phosphorus, low molecular weight basic nitrogen, and optional boron-containing compounds. See Watts, Abstract. Because Watts fails to teach or suggest modifying the Carlisle composition to include the claimed acrylamide compound, no *prima facie* case of obviousness has been made, and the rejection should be withdrawn.

Carlisle in view of Liesen

The Office has rejected claims 6-8 and 21-22 as being unpatentable over Carlisle in view of U.S. Patent No. 6,255,261 ("Liesen"), for the reasons set forth at pages 8 to 9 of the Office Action. Applicant respectfully traverses the rejection.

Claims 6-8 and 21-22 depend either directly or indirectly from claims 1 and 16, respectively, and therefore incorporate all of the limitations of claims 1 and 16. As discussed above, Carlisle fails to teach all the limitations of claims 1 and 16, including applicant's claimed acrylamide compound.

Liesen does not remedy the defects of Carlisle, but instead is directed to novel polyalkyl (meth) acrylates. See Liesen, Column 2, lines 5-7. Because Liesen fails to teach or suggest modifying the Carlisle composition to include the claimed acrylamide compound, no *prima facie* case of obviousness has been made, and the rejection should be withdrawn.

Carlisle in view of Papay

The Office has rejected claims 11 and 15 as being unpatentable over Carlisle in view of U.S. Patent No. 5,652,201 ("Papay"), for the reasons set forth at pages 9 to 10 of the Office Action. Applicant respectfully traverses the rejection.

Claims 11 and 15 depend either directly or indirectly from claim 1, and therefore incorporate all of the limitations of claim 1. As discussed above, Carlisle fails to teach all the limitations of claim 1, including applicant's claimed acrylamide compound.

Papay does not remedy the defects of Carlisle, but instead is directed to oleaginous compositions and additive concentrates comprising a) at least one oil-soluble overbased alkali or alkaline earth metal-containing detergent, and b) one or more oil-soluble boron-free additive compositions formed by heating (i) at least one boron-free oil soluble ashless dispersant containing basic nitrogen and/or at least one hydroxyl group, with (ii) at least one inorganic phosphorus acid. See Papay, Abstract. Because Papay fails to teach or suggest modifying the Carlisle composition to include

the claimed acrylamide compound, no *prima facie* case of obviousness has been made, and the rejection should be withdrawn.

Carlisle in view of Papay and Liesen

The Office has rejected claims 12-14 as being unpatentable over Carlisle in view Papay and Liesen, for the reasons set forth at pages 10-11 of the Office Action. Applicant respectfully traverses the rejection.

Claims 12-14 depend either directly or indirectly from claim 1, and therefore incorporate all of the limitations of claim 1. As discussed above, Carlisle fails to teach all the limitations of claims 1 and 16, including applicant's claimed acrylamide compound.

As also discussed above, neither Papay nor Liesen remedy the defects of Carlisle. Because Papay and Liesen fail to teach or suggest modifying the Carlisle composition to include the claimed acrylamide compound, no *prima facie* case of obviousness has been made, and the rejection should be withdrawn.

Carlisle in view of Lambert

The Office has rejected claims 24 and 26 as being unpatentable over Carlisle in view of U.S. Patent No. 5,888,947 ("Lambert"), for the reasons set forth at page 11 of the Office Action. Applicant respectfully traverses the rejection.

Claim 24 recites a method comprising, among other things, an acrylamide compound of the formula:



where R^1 is selected from an α,β -unsaturated linear or branched alkylene group, and R^2 and R^3 are independently selected from H, a linear or branched alkyl or alkenyl group, an aryl group, a cycloalkyl group, an aralkyl group, an alkyaryl group, an alkyl amine group, and an aryl amine group, provided that at least one of R^2 and R^3 contain a titratable nitrogen. Claim 26 depends from claim 24, and therefore contains all the limitations of claim 24.

As discussed above, Carlisle fails to teach Applicant's claimed acrylamide monomer compound. Instead, Carlisle teaches polyacrylates and polyacrylamides of formula III. See Carlisle, Column 3, lines 33 to 50. The formula III polyacrylates are defined by the Carlisle reference as compounds comprising at least two unsaturated acrylic groups. See column 3, lines 29-30.

Applicant's claimed acrylamide differs from that of Carlisle at least because it does not contain at least two unsaturated acrylic groups. Therefore, Carlisle fails to teach all the limitations of claim 24, including applicant's claimed acrylamide compound.

Lambert does not remedy the defects of Carlisle, but instead is directed to a liquid lubricant that is composed principally of vegetable based components. See Lambert, column 2, lines 65-67. Because Lambert fails to teach or suggest modifying the Carlisle composition to include the claimed acrylamide compound, no *prima facie* case of obviousness has been made, and the rejection should be withdrawn.

Carlisle in view of Lambert and Papay

The Office has rejected claim 25 as being unpatentable over Carlisle in view of Lambert and Papay, for the reasons set forth at page 12 of the Office Action. Applicant respectfully traverses the rejection.

Claim 25 depends either directly or indirectly from claim 24, and therefore incorporates all of the limitations of claim 24. As discussed above, Carlisle fails to teach all the limitations of claim 24, including applicant's claimed acrylamide compound.

For the reasons described above, neither Lambert nor Papay remedy the defects of Carlisle. Because Lambert and Papay fail to teach or suggest modifying the Carlisle composition to include the claimed acrylamide compound, no *prima facie* case of obviousness has been made, and the rejection should be withdrawn.

Carlisle in view of Lambert and Liesen

The Office has rejected claims 27-29 as being unpatentable over Carlisle in view of Lambert and Liesen, for the reasons set forth at pages 12-13 of the Office Action. Applicant respectfully traverses the rejection.

Claims 27-29 depend either directly or indirectly from claim 24, and therefore incorporate all of the limitations of claim 24. As discussed above, Carlisle fails to teach all the limitations of claim 24, including applicant's claimed acrylamide compound.

For the reasons discussed above, neither Lambert nor Liesen remedy the defects of Carlisle. Because Lambert and Liesen fail to teach or suggest modifying the Carlisle composition to include the claimed acrylamide compound, no *prima facie* case of obviousness has been made, and the rejection should be withdrawn.

CONCLUSION

In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 50-2961.

Respectfully submitted,

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For

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By: _____
Matthew L. Whipple
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